CLAIM LISTING

14. (Previously presented) A photolithographic sensitive coated substrate comprising:

(a) a substrate;

(b) a thermally cured undercoat on the substrate; and

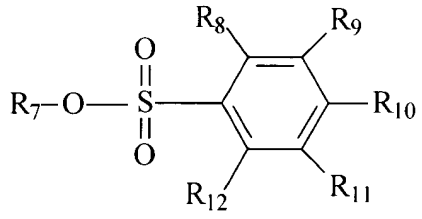
(c) a radiation-sensitive resist topcoat on the thermally cured undercoat;

wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator;

wherein said radiation-sensitive resist topcoat is a chemically amplified resist containing silicon.

15. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer comprises monomer units selected from the group consisting of: hydroxystyrene, hydroxyalkyl acrylate or methacrylate, hydroxycycloalkyl acrylate or methacrylate, benzyl alcohols, and allyl alcohol monomer units.

16. (Original) The coated substrate of claim 14 wherein said thermal acid generator has the general structure:

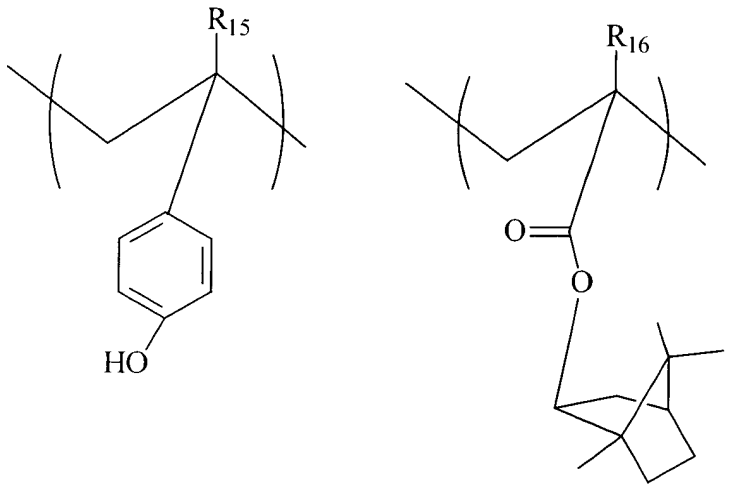


where R_7 is a substituted or unsubstituted alkyl, cycloalkyl or aromatic group wherein the substituted group is halogen, alkoxy, aromatic, nitro or amino group; and R_8 to R_{12} are independently selected from hydrogen, linear or branched C_1 to C_4 alkyl, alkoxy, amino, alkylamino, aryl, alkenyl, halogen, acyloxy, cycloalkyl, or annulated cycloalkyl, aromatic and heterocyclic groups.

17. (Original) The coated substrate of claim 15 wherein said hydroxyl-containing polymer comprises monomer units selected from the group consisting of: hydroxyalkyl acrylate or methacrylate and allyl alcohol units.

18. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer further comprises monomer units of cycloaliphatic ester of acrylic or methacrylic acid units.

19. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer comprises the following monomer units:

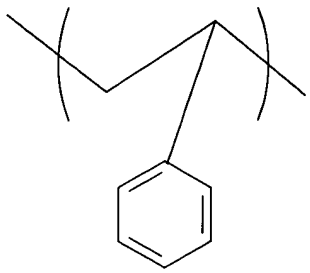


(A) (B)

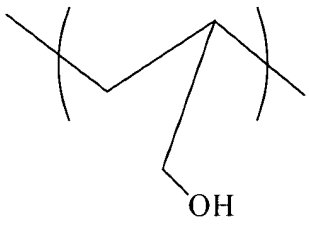
wherein R_{15} and R_{16} are independently a hydrogen or a methyl.

20. (Original) The coated substrate of claim 19 wherein the mole % of monomer unit (A) is about 25 to 60 mole % and the mole % of monomer unit (B) is about 40 to 75 mole %.

21. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer comprises the following monomer units:



(C)



(D)

22. (Original) The coated substrate of claim 21 wherein the mole % of monomer unit (C) is about 39-60 mole % and the mole % of monomer unit (D) is about 40 to 61 mole %.

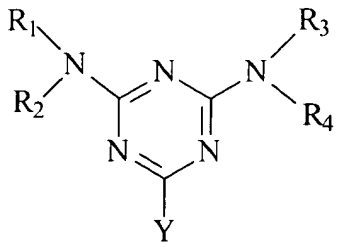
23. (Previously presented) The coated substrate of claim 14 wherein the hydroxyl-containing polymer comprises biphenyl acrylate or methacrylate and hydroxyethyl acrylate or methacrylate.

24. (Original) The coated substrate of claim 23 wherein the amount of biphenyl acrylate or methacrylate is about 50 to 90 mole % and the amount of hydroxyethyl acrylate or methacrylate is about 10 to 50 mole %.

25. (Canceled)

26. (Canceled)

27. (Original) The coated substrate of claim 14 wherein said amino cross-linking agent has the general formula



wherein Y is NR_5R_6, or a substituted or unsubstituted aryl or alkyl group, R_1 to R_6 are independently a hydrogen or a group of the formula $-CH_2OH$ or CH_2OR_{17} where R_{17} is a alkyl group of about 1 to 8 carbons.

28. (Previously presented) A process for the production of relief structures comprising the steps of:

(a) forming a coated substrate; wherein said coated substrate comprises a substrate; a thermally cured undercoat disposed on said substrate; and a radiation-sensitive resist topcoat disposed on said thermally cured undercoat; wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator; and wherein said radiation-sensitive resist topcoat is a chemically amplified resist containing silicon;

(b) imagewise exposing said radiation-sensitive resist topcoat to actinic radiation; and

(c) forming a resist image by developing said radiation-sensitive resist topcoat with a developer.

29. (Previously presented) The process of claim 28, wherein said hydroxyl-containing polymer comprises about 30 to 60 mole % of hydroxystyrene monomer units and 40 to 70 mole % of isobornyl acrylate or methacrylate monomer units.

30. (Previously presented) The process of claim 28, wherein said hydroxyl-containing polymer comprises about 39 to 60 mole % of styrene monomer units and about 40 to 61 mole % of allyl alcohol monomer units.

31. (Previously presented) The process of claim 28, wherein said hydroxyl-containing polymer comprises about 50 to 90 mole % of biphenyl acrylate or methacrylate and 10 to 50 mole % of hydroxyethyl acrylate or methacrylate.

32. (Canceled)

33. (Previously presented) The process of claim 28, further comprising the step of:

removing said thermally cured undercoat composition to form an image thereof.

34. (Previously presented) A photolithographic sensitive coated substrate comprising:

(a) a substrate;

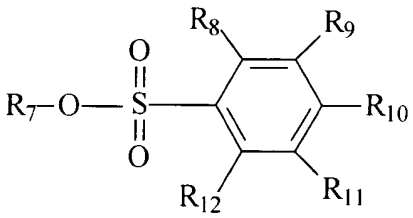
(b) a thermally cured undercoat on the substrate; and

(c) a radiation-sensitive resist topcoat on the thermally cured undercoat;

wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator;

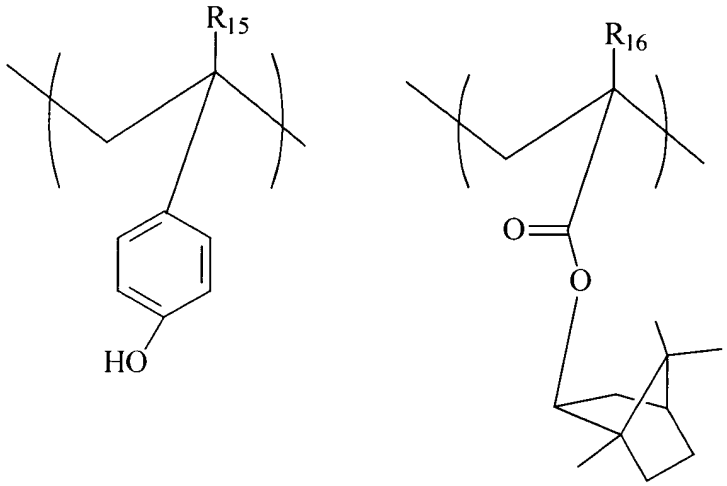
wherein said hydroxyl-containing polymer further comprises monomer units of cycloaliphatic ester of acrylic or methacrylic acid units.

35. (Previously presented) The coated substrate of claim 34, wherein said thermal acid generator has the general structure:



where R_7 is a substituted or unsubstituted alkyl, cycloalkyl or aromatic group wherein the substituted group is halogen, alkoxy, aromatic, nitro or amino group; and R_8 to R_{12} are independently selected from hydrogen, linear or branched C_1 to C_4 alkyl, alkoxy, amino, alkylamino, aryl, alkenyl, halogen, acyloxy, cycloalkyl, or annulated cycloalkyl, aromatic and heterocyclic groups.

36. (Previously presented) The coated substrate of claim 34, wherein said hydroxyl-containing polymer comprises the following monomer units:

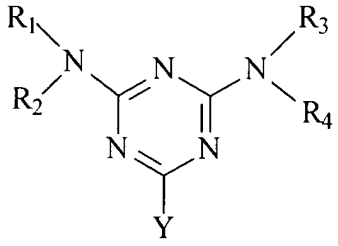


(A) (B)

wherein R_{15} and R_{16} are independently a hydrogen or a methyl.

37. (Previously presented) The coated substrate of claim 36, wherein the mole % of monomer unit (A) is about 25 to 60 mole % and the mole % of monomer unit (B) is about 40 to 75 mole %.

38. (Previously presented) The coated substrate of claim 34, wherein said amino cross-linking agent has the general formula



wherein Y is NR_5R_6, or a substituted or unsubstituted aryl or alkyl group, R_1 to R_6 are independently a hydrogen or a group of the formula $-CH_2OH$ or CH_2OR_{17} where R_{17} is an alkyl group of about 1 to 8 carbons.

39. (Previously presented) A photolithographic sensitive coated substrate comprising:

(a) a substrate;

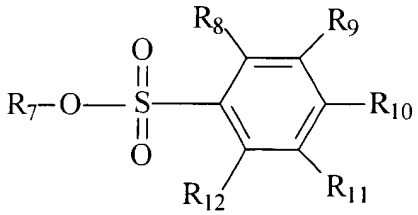
(b) a thermally cured undercoat on the substrate; and

(c) a radiation-sensitive resist topcoat on the thermally cured undercoat;

wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator;

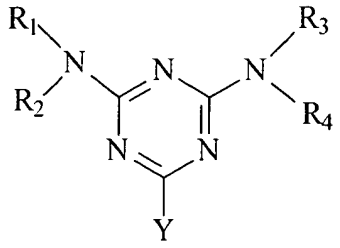
wherein said hydroxyl-containing polymer comprises biphenyl acrylate or methacrylate and hydroxyethyl acrylate or methacrylate.

40. (Previously presented) The coated substrate of claim 39, wherein said thermal acid generator has the general structure:



where R_7 is a substituted or unsubstituted alkyl, cycloalkyl or aromatic group wherein the substituted group is halogen, alkoxy, aromatic, nitro or amino group; and R_8 to R_{12} are independently selected from hydrogen, linear or branched C_1 to C_4 alkyl, alkoxy, amino, alkylamino, aryl, alkenyl, halogen, acyloxy, cycloalkyl, or annulated cycloalkyl, aromatic and heterocyclic groups.

41. (Previously presented) The coated substrate of claim 39 wherein said amino cross-linking agent has the general formula



wherein Y is NR_5R_6, or a substituted or unsubstituted aryl or alkyl group, R_1 to R_6 are independently a hydrogen or a group of the formula $-CH_2OH$ or CH_2OR_{17} where R_{17} is an alkyl group of about 1 to 8 carbons.

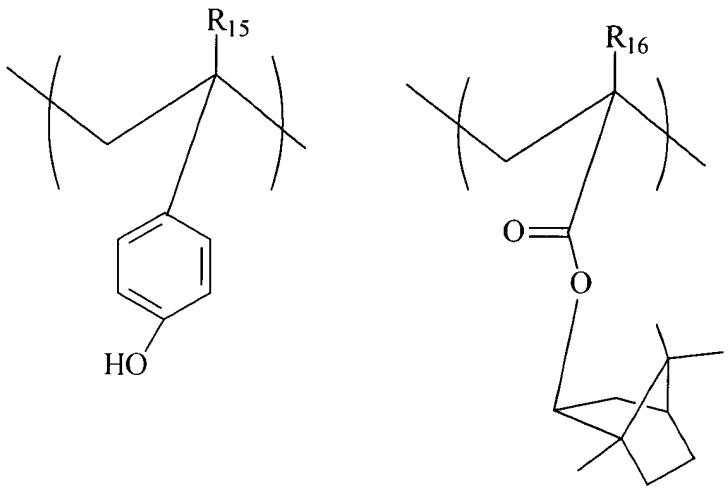
42. (Previously presented) A process for the production of relief structures comprising the steps of:

(a) forming a coated substrate; wherein said coated substrate comprises a substrate; a thermally cured undercoat disposed on said substrate; and a radiation-sensitive resist topcoat disposed on said thermally cured undercoat; wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator; and wherein said hydroxyl-containing polymer further comprises monomer units of cycloaliphatic ester of acrylic or methacrylic acid units;

(b) imagewise exposing said radiation-sensitive resist topcoat to actinic radiation; and

(c) forming a resist image by developing said radiation-sensitive resist topcoat with a developer.

43. (Previously presented) The process of claim 42, wherein said hydroxyl-containing polymer comprises the following monomer units:



(A) (B)

wherein R_{15} and R_{16} are independently a hydrogen or a methyl.

44. (Previously presented) The process of claim 43, wherein the mole % of monomer unit (A) is about 25 to 60 mole % and the mole % of monomer unit (B) is about 40 to 75 mole %.

45. (Previously presented) The process of claim 42, further comprising the step of:

removing said thermally cured undercoat composition to form an image thereof.

46. (Previously presented) A process for the production of relief structures comprising the steps of:

(a) forming a coated substrate; wherein said coated substrate comprises a substrate; a thermally cured undercoat disposed on said substrate; and a radiation-sensitive resist topcoat disposed on said thermally cured undercoat; wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator; and wherein said hydroxyl-containing polymer comprises biphenyl acrylate or methacrylate and hydroxyethyl acrylate or methacrylate;

(b) imagewise exposing said radiation-sensitive resist topcoat to actinic radiation; and

(c) forming a resist image by developing said radiation-sensitive resist topcoat with a developer.

47. (Previously presented) The process of claim 46, wherein the amount of biphenyl acrylate or methacrylate is about 50 to 90 mole % and the amount of hydroxyethyl acrylate or methacrylate is about 10 to 50 mole %.

48. (Previously presented) The process of claim 46, further comprising the step of:

removing said thermally cured undercoat composition to form an image thereof.